

ES2™ Boiler

Gas Fired, High Efficiency, Natural Draft,
Cast Iron Water Boiler



85% AFUE

IQ control
system

- Features Burnham IQ Control System™
- True Plug & Play Controls Utilizing Burnham IQ Option Cards;
 - Outdoor Reset (with Domestic Hot Water Priority)
 - Auxiliary High Limit
 - Low Water Cut-off
 - Optional LCD Touch Screen Display
- Improved Boiler Operation

- The ONLY 85% AFUE Atmospheric Cast Iron Boiler Made in America!
- Qualifies for Energy Star Rebates
- Efficient Operation Saves Homeowners Money!
- Innovative Design and Appearance
- Ideal Replacement for Millions of Existing Boiler Installations
- 7 sizes, 70-280 MBH input



**Limited
Lifetime
Warranty!**

GREATER ENERGY SAVINGS

Burnham®
by
U.S. Boiler Company

It's a Whole New Game, and the Burnham ES2 is in the Lead!



Meet the ES2...Unmatched Anywhere!

U.S. Boiler Company is proud to introduce the new Burnham ES2 boiler... the first all new atmospheric, gas-fired, cast iron boiler for home heating that has been designed in decades. Boasting a proven, long-lasting, American-made cast iron heat engine, the ease & simplicity of atmospheric venting, an exclusive control system that provides features unrivaled by any boiler in the market, an outstanding 85% efficient ENERGY STAR® rating for an atmospheric gas boiler, and an attractive exterior which is equivalent or superior to the design of the most sophisticated condensing boilers. Who else can provide all of this in one package? The answer is simple... **NOBODY!**

Only U.S. Boiler Company has combined great energy savings with "green" ENERGY STAR ratings, and reliable long-lasting cast iron in an all new, modern design, atmospheric gas-fired boiler that is Made in America!

The Ultimate Replacement Boiler

Why is the ES2 the ultimate replacement boiler? Because we make it simple! The ES2 has been designed to be a "drop in" replacement. Boiler connections are compatible with industry standard near boiler piping configurations. Generally, this means that the installer does not need to install additional piping to connect the boiler to the home's existing system.

Additionally, if your home is one of the over two million American homes equipped with an atmospheric (chimney vented) gas boiler, you may already have the basis for a new high efficiency venting system that allows you to take full advantage of the ES2's chimney venting capabilities. For most homes, it's as simple as installing a metallic chimney liner that insulates the interior of your chimney. Discuss your particular chimney requirements with your installing contractor.

The ES2 is the first ENERGY STAR rated, American made, atmospheric boiler to allow the use of a standard metal-lined chimney. Previously if a homeowner wanted to replace their boiler with a high efficiency replacement, they faced the prospect of buying a power-vented boiler, which usually meant abandoning their existing chimney and penetrating a side wall, or the foundation of their home with a new flue gas outlet. With the new ES2, you can get high efficiency, and once lined, still use your home's existing chimney, provided the chimney and liner meet the requirements specified by the manufacturer's installation instructions. Doing so will provide you with years of quiet, clean, efficient home heating. In addition, the ES2 has been designed with a low profile draft diverter. This means that the vent connection to the chimney has been lowered up to 19", making vent installation quick and easy.



The Best Boiler for Most Homes

The ES2 was created with a single goal in mind – strike a balance between high efficiency and real-world practicality. U.S. Boiler Company has taken the proven, reliable and simple design of an atmospheric cast iron boiler and has attained what no other domestic manufacturer has on this kind of boiler... an ENERGY STAR certification.

Designed to handle the kind of high water volume systems present in most homes, the rugged ES2 cast iron heat exchanger can easily operate with lower system return water temperatures than conventional cast iron boilers. Most cast iron boilers require a minimum of at least 140°F return water temperatures to prevent damage to the heat exchanger. The ES2 has been designed to accept return water temperatures as low as 110°F without complicated piping or additional controls. This means that the boiler does not have to fire at a high rate to maintain comfortable temperatures in the home, which translates in HIGH EFFICIENCY and ENERGY savings!

Also the ES2 is equipped, as standard, with the powerful, IQ Boiler Control System which provides operating controls and constantly monitors the ES2 boiler to help maximize operating efficiencies; and together with an optional Outdoor Reset Control can provide unparalleled system efficiencies that can provide even greater energy savings.

In addition, the cast iron used in each ES2 is manufactured using some of the most advanced foundry equipment and techniques available at Burnham Foundry, LLC in Ohio. Still concerned about peace of mind and longevity? Look no further than the ES2. Each ES2 is backed by a LIMITED LIFETIME WARRANTY on the heat exchanger. Additional coverage is available by purchasing the U.S. Boiler Extended Warranty Plan, which provides blanket protection on parts and labor for 5 or 10 years from the date of installation.

ENERGY STAR® Rebates...

ENERGY STAR is a joint program created by the EPA and the U.S. Dept. of Energy. Their goal was to create an easily identifiable method of showing consumers which products are the most energy efficient. ENERGY STAR certified products have saved homeowners \$19 billion in utility costs, and have substantially reduced greenhouse gases. For homeowners considering the ES2, an ENERGY STAR certification means that the purchase of an ES2 may qualify for federal and state tax rebates that non-ENERGY STAR boilers are not eligible for. Additional utility rebates may also apply. Further details on these rebates are available online. Please visit www.dsireusa.org for a complete listing of available rebates.



ES2...

The Inside Story

Contoured Hood, Optional Display



Durable contrasting polyethylene hood can be fitted with optional LCD touch screen display

Convenient Junction Box

With plenty of room for 120V connections

Supply & Return Tappings

Match locations for industry-standard installations. Makes replacing and older boiler easy!

Attractive, Modern, Insulated, Powder Coated Steel Jacket

Tough powder coated steel jacket designed for durability and great appearance. Jacket is lined with thick insulation, and has an additional layer of insulation at the base of the boiler.



Integral Draft Diverter

Reduces installed boiler height up to 19", allowing a broader range of installations. Includes a built-in, factory wired, integrated spill switch.



Vent Connector Kit

Saves time & simplifies installation, includes 5' flexible insulated double wall vent connector and adapters for easy connection to the chimney system



Concealed Controls

All boiler controls are located inside the boiler jacket for safety and a clean appearance

Trapezoidal Legs with Nylon Glides

Allow for easy positioning of the boiler, and protect against potential damage to flooring



Limited Lifetime Warranty

The ES2 is protected with a limited lifetime warranty on the heat exchanger. Additional coverage is available by purchasing the U.S. Boiler Extended Warranty Plan which provides blanket protection on parts and labor for 5 or 10 years from the date of installation.

Burnham Alliance SL™ Indirect-fired Water Heaters

For an abundant supply of domestic hot water, be sure to use an Burnham Alliance SL indirect-fired water heater with every boiler application. Burnham Alliance SL water heaters are designed with an effective hydrastone lining that offers superior corrosion resistance and outstanding performance in a wide variety of water conditions. Water heaters are available in five sizes and come with a unique 10/2/1 warranty – 10 years on the tank and coil, 2 years labor and 1 year on parts. An optional lifetime warranty is also available.





IQ Boiler Control

Integrates aquastat, relay, and ignition functions into a single module. Mounted on hinged panel for ease of access.

IQ Option Panel

Accepts optional IQ Option Cards for simple "plug & play" installation of:

- Outdoor Reset
- Low Water Cutoff
- Aquastat



Step Opening Gas Valve

This type of gas valve enables the boiler to light on low fire. Once a flame is established, the valve gently opens to full fire safely and smoothly. This provides quiet ignition and promotes long boiler life.

G3 Base

Featuring heavy gauge steel construction, this base provides unmatched stability and safety through its wrap-around design. The design also provides a tighter seal with fewer joints. Thick insulating plates direct the heat from the burner tubes upward into the heat exchanger, helping to fully utilize every BTU possible from the combustion process.

Made in America

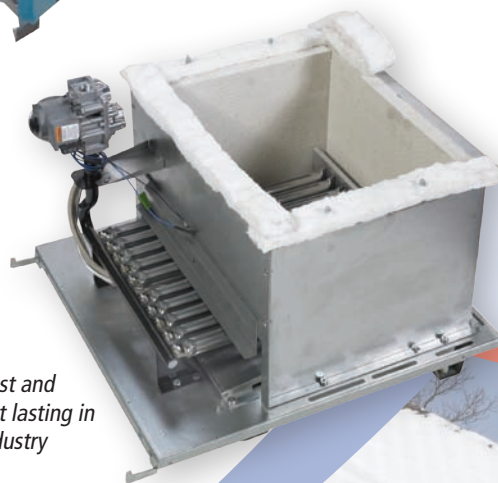


Proven G3 Heat Exchanger

Made of specially formulated BC25-HSi high silicon grey iron, this heat exchanger has been precision formed to create turbulent water flow throughout all areas of the heat exchanger, eliminating hot and cold spots, and maximizing heat transfer.



Cast iron, proven for long life



The best and longest lasting in the industry





Controls, Like No Other...

If the G3 heat exchanger is the brawn of the ES2 Boiler, the IQ Boiler Control System is the brains. The IQ Control System has been specifically designed for the next generation of high efficiency cast iron boilers. It simplifies boiler operating controls by combining all the typical boiler safety controls, including ignition, into one central control module. LED readouts clearly communicate system status updates, and The end result is a control system which is **simple to read, simple to set up, and simple to diagnose.**

The IQ Option Panel resides below the boiler control. The Option Panel permits the addition of features to the boiler by way of genuine IQ Option Cards. These option cards allow the "plug-n-play" installation of such features as Outdoor Reset, Low Water Cutoff, and an auxiliary Aquastat. Thanks to the unique design of the IQ Option Panel, installation of these boiler control upgrades are extremely easy for the qualified technician to perform.

IQ Outdoor Reset Card – for Increased Energy Savings

A weather-sensitive control that adjusts the boiler temperature up or down based on the outdoor air temperature. It's a simple concept. On cooler days, a home requires more heat to remain at a comfortable temperature inside. On these days, the boiler temperature is automatically adjusted upward. By contrast, on warmer days, a home requires less heat to maintain comfort, so the boiler temperature is adjusted down. Adjusting the boiler temperature has several advantages. Often it allows the boiler to operate at a lower temperatures, which **enhances efficiency and can deliver savings of 15-20%.** It maximizes the comfort of the heating system by allowing the boiler to run for longer cycles at a steady temperature, minimizing wasteful on/off cycling. Adding the benefits of outdoor reset to the ES2 boiler is as simple as plugging the Option Card into the IQ Option Panel and connecting a 2-wire sensor. Additionally, the IQ Outdoor Reset Option Card contains many powerful features normally found only on large stand-alone control packages, such as:

- Selectable Domestic Hot Water Priority
- Selectable & Adjustable Domestic Priority Protection
- Adjustable Domestic Setpoint
- Selectable and Adjustable Temperature Boost

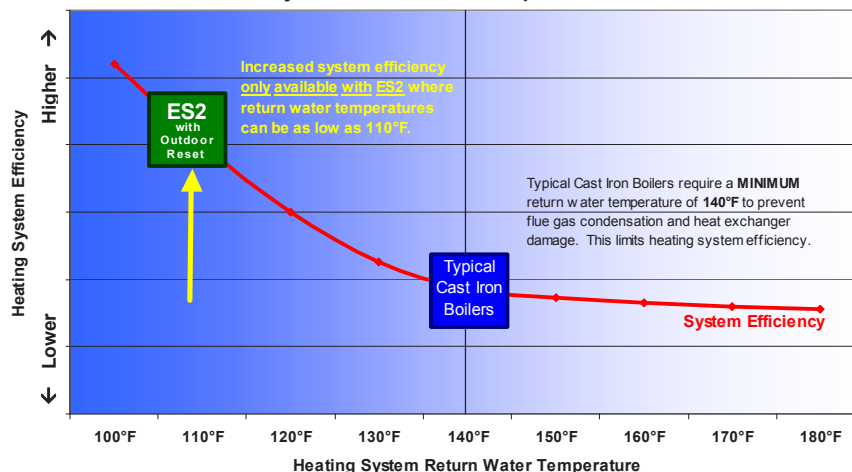
All settings on the IQ Outdoor Reset Option Card can be customized for ideal performance in any heating system.



This is the ONLY boiler that takes real advantage of outdoor reset control.

Because of the ES2's exceptional G3 heat exchanger, the ES2 boiler can safely handle return water temperatures as low as 110°F, which significantly increases the system efficiency of most heating systems. Even higher system efficiencies can be achieved by adding the IQ Outdoor Reset Card to the IQ Boiler Control System in an ES2, resulting in more fuel savings and improved comfort.

**Heating System Efficiency in Relationship to
System Return Water Temperature**



IQ Low Water Cut-Off (LWCO) Option Card

A safety device designed to disable the boiler if it senses that the water level has dropped below safe operating limits. In some areas this device is required by code to be on every new boiler installation. Available in auto and manual reset versions, the IQ LWCO Option Card plugs easily into the IQ Option Panel and feature a one-wire connection to the 3/4" sensor probe which is mounted in the near boiler system piping. These cards feature built-in diagnostics, adjustable setpoint & differential, and manual reset versions are compatible with CSD-1 in the U.S. and Canada.

IQ Aquastat Option Card

An additional temperature sensing device that will disable the boiler if it exceeds the built-in temperature limit. Required by local code in some areas, the Aquastat Option Card plugs easily into the IQ Option Panel and connects to the temperature sensor with a single plug-in connection. IQ Aquastat cards feature built-in diagnostics, adjustable setpoint & differential, and manual reset versions are compliant with CSD-1 in the U.S. and Canada.

IQ Option Card List

Part Number	Description
102723-01	IQ Outdoor Reset Option Card
102771-01	IQ LWCO Option Card - Auto Reset
102714-01	IQ LWCO Option Card - Manual Reset
102717-01	IQ Hi Limit (Aquastat) Option Card - Auto Reset
102720-01	IQ Hi Limit (Aquastat) Option Card - Manual Reset

LCD Touch Screen Display

The IQ Touch Screen Display Kit offers the option of adding a state-of-the-art 3.5" multi-color LCD touch screen display to the ES2 boiler. The display mounts in a special knock-out in the plastic hood above the front door of the ES2 boiler and communicates with the IQ Boiler Control and IQ Option Cards. All boiler settings, status and errors are displayed in full text on the bright backlit display. The display features easy-to-follow full-text explanations of all control settings, as well as help screens with comprehensive diagnostics and troubleshooting information. In the event of a boiler error or lock-out, the touch screen display turns red and flashes. The display connects to the IQ control through a simple plug-in connection.

Burnham IQ Option card; Low Water Cutoff with Manual Reset



Burnham IQ Option card; Low Water Cutoff with Automatic Reset

Burnham IQ Option card; Aquastat with Manual Reset



Burnham IQ Option card; Aquastat with Automatic Reset



The IQ Boiler Control System Available EXCLUSIVELY from



Ratings



Model Number*	Input (MBH)	DOE Heating Capacity (MBH)	I=B=R Water Ratings (MBH)	AFUE%	Electrical Requirements**
ES23	70	59	51	85.0	<2 Amps
ES24	105	88	77	85.0	<2 Amps
ES25	140	118	102	85.0	<2 Amps
ES26	175	147	128	85.0	<2 Amps
ES27	210	176	153	85.0	<2 Amps
ES28	245	206	179	85.0	<2 Amps
ES29	280	235	205	85.0	<2 Amps

* Add suffix "N" for natural gas, or suffix "L" for LP gas models

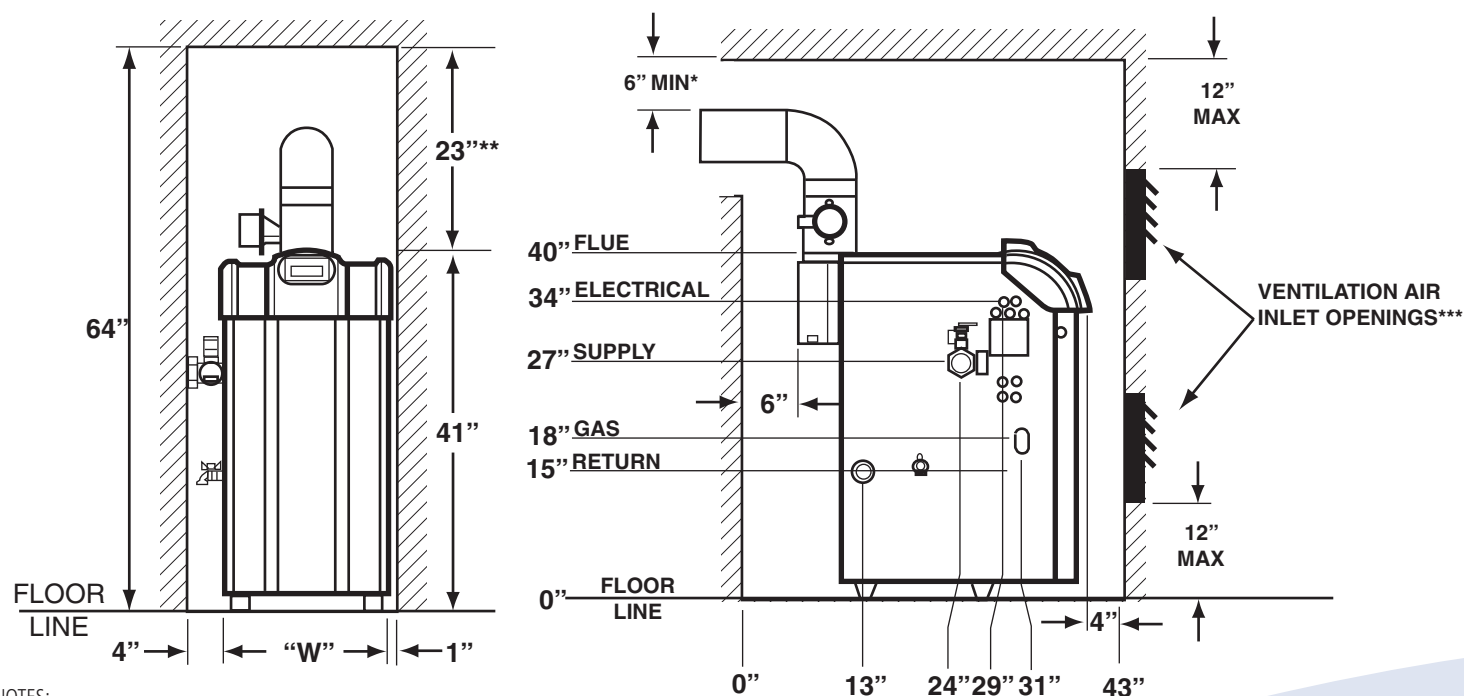
**Requirement for controls only, add for amp draw of circulators.

All models certified for use from sea level to 10,000 feet in elevation. Outputs are reduced by 2% per 1,000 feet in elevations from 5,000 to 10,000 feet.

All ES2s are shipped with 30 psi relief valves, MAWP is 50 psi.

Specifications

Model Number	Dimensions (inches)			Connections (inches)					Water Content (gal.)	Approx. Shipping Wt. (lbs.)
	Width	Height	Depth	Vent	Supply	Return	Gas Valve	Relief Valve		
ES23	12-3/4"	41"	33"	4"	1-1/4"	1-1/4"	1/2"	3/4"	2	250
ES24	15-1/2"	41"	33"	5"	1-1/4"	1-1/4"	1/2"	3/4"	3	300
ES25	18-1/2"	41"	33"	6"	1-1/4"	1-1/4"	1/2"	3/4"	4	350
ES26	21-1/2"	41"	33"	6"	1-1/4"	1-1/4"	1/2"	3/4"	5	410
ES27	24-3/4"	41"	33"	7"	1-1/4"	1-1/4"	3/4"	3/4"	6	460
ES28	24-3/4"	41"	33"	7"	1-1/4"	1-1/4"	3/4"	3/4"	7	510
ES29	30-3/4"	41"	33"	8"	1-1/4"	1-1/4"	3/4"	3/4"	8	560



NOTES:

Caution: chimney, liner, and vent connector must meet requirements specified by manufacturer's installation instructions

* Minimal radial distance around vent pipe and breeching

** Add height required to maintain 6" clearance from all breeching components

*** Area of each opening 1 sq. inch for each 1,000 BTUH input - with minimum of 100 sq. inches. Height of opening should be half the width.



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